Abstract Submitted to the
International Conference on Strongly Correlated Electron Systems
University of Michigan, Ann Arbor
August 6-10, 2001

From Antiferromagnetic Order to Static Magnetic Stripes: The Phase Diagram of (LA,Eu)$_{2-x}$Sr$_x$CuO$_4$:*

H.-H. Klauss[1], W. Wagener[1], W. Kopmann[1], D. Baabe[1], D. Mienert[1], F.J. Litterst[1], M. Hücker[2], B. Büchner[1,2]

[1] *Institut f. Metallphysik, TU Braunschweig, D-38106 Braunschweig, Germany*
[2] *II. Physikalisches Institut, RWTH Aachen, D-52056 Aachen, Germany*

The magnetic order of $La_{1.8-x}Eu_{0.2}Sr_xCuO_4$ ($x \leq 0.2$) has been investigated with μSR techniques. In this system a low temperature tetragonal (LTT) structure is present in the entire range of doping and it is possible to follow the evolution from the long range antiferromagnetic state at $x = 0$ to the static magnetic stripes. We find a non-monotonic change of the Néel temperature with increasing x and the obtained magnetic phase diagram of the LTT phase resembles the generic phase diagram of the cuprates where the superconductivity is replaced by a second antiferromagnetic phase †. At a charge doping of $x = 0.2$ a crossover from magnetic order to superconductivity has been found. New experiments show that the ground state at $x = 0.2$ can be tuned from magnetism to superconductivity by a variation of the Eu content between 0.23 and 0.10 changing only the LTT lattice distortion.

*This work was supported by the BMBF and the DFG

†Phys. Rev. Lett. **85** (2000) 4590